REMARKS

Applicant respectfully requests reconsideration of this application. Claims 1-30 are currently pending. Claims 1, 10, 19, 22, and 28-30 have been amended. No claims have been canceled or added.

Therefore, claims 1-30 are now presented for examination.

Claim Rejection under 35 U.S.C. §103

Liao in view of Gruenwald

The Examiner rejected claims 1-30 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 7,116,663 of Liao (hereinafter referred to as "*Liao*") in view of U.S. Patent 6,542,896 of Gruenwald (hereinafter referred to as "*Gruenwald*").

Claim 1, as amended and clarified herein, reads as follows:

1. A method comprising:

grouping single fields of a multiple-field source into a search target having a plurality of multiple-field keys (MFKs), each MFK having single fields that correspond to single fields in one of a plurality of multiple-field vectors (MFVs) of entries in a data structure;

generating a set of queries based, at least in part, on the MFKs, wherein each query includes one or more of the MFKs and wherein each query has a different MFK as a lead MFK;

using a query to determine whether the non-wildcard values in the MFVs of an entry match the non-wildcard values in corresponding MFKs of the search target; and

using, if no entry has non-wildcard values in the MFVs that match the corresponding non-wildcard values in the MFKs, the queries to determine whether the entry has non-wildcard values in a MFV that match the non-wildcard values in a corresponding lead MFK, plus remaining

MFVs that match corresponding remaining MFKs based on matching the non-wildcard values and wildcard values.

Claim 1 thus provides for "grouping single fields of a multiple-field source into a search target having a plurality of multiple-field keys (MFKs), each MFK having single fields that correspond to single fields in one of a plurality of multiple-field vectors (MFVs) of entries in a data structure". Claim further provides for "generating a set of queries based, at least in part, on the MFKs, wherein each query includes one or more of the MFKs and wherein each query has a different MFK as a lead MFK". It is submitted that, among other difference, the cited references do not teach or suggest these elements.

Liao regards bit pattern matching, and specifically matching a target bit pattern with multiple filter bit patterns, described as multi-field classification using enhanced masked matching. As described in *Liao*, a match is sought between a target pattern and multiple filter bit patterns. However, in operation, this system is described in *Liao* as providing for the generation of a filter array from the filter bit patterns, with at least one intermediate pattern being generated from the filter array. (*Liao*, col. 5, lines 25-30) The columns of the intermediate arrays are extracted based on bit values of the target bit pattern. (*Liao*, col. 5, lines 30-32). As further shown in Liao, this may be done by generating a P (positive) array and a Q (negative) array, with each P element equaling the value of the filter element if 1 or 0, each Q element equaling the opposite of the filter element (0 when 1 and 1 when 0), with P = Q = 1 if the element is a "don't care". (*Liao*, col. 7, lines 41-58) The target bit pattern is then processed, with each bit of the target pattern defining a column by position and either the P or Q array by value, resulting in an array to be evaluated. (*Liao*, col. 9, lines 24-45) There is then a bit wise AND operation across each row of the array to generated a match vector, which will indicate which rows

of the filter array match the target bit pattern (*Liao*, col. 9, lines 50-63), with multiple matches being prioritized by position in the match vector (*Liao*, col. 9, line 64 through col. 10, line 3).

However, this is not equivalent to the provisions in Claim 1 of the current application regarding grouping single fields of a multiple-field source into a search target having a plurality of multiple-field keys (MFKs), each MFK having single fields that correspond to single fields in one of a plurality of multiple-field vectors (MFVs) of entries in a data structure. There is no grouping of single fields shown here in *Liao*. What is occurring is that an array is being formed that in a manner reflects certain values for all of the fields that are being searched, using the positive and negative arrays.

Liao then discusses an enhanced process (EMMM) in which multiple bits are looked up at one time. In this process, rather than generating the P and Q arrays for the entire filter array, intermediate arrays are generated for each of a number of chunks of the filter array. (*Liao*, Fig. 4, elements 200-240) Each chunk is processed (*Liao*, Fig. 4, elements 250-340), and then there is a determination whether each chunk of the bit pattern matches with a bit combination of a column of the filter array chunk associated with the bit pattern chunk. (*Liao*, Fig. 4, elements 370-380) again, a different kind of match process is being used. *Liao* does not address multiple field keys, which are a part of every element of claim 1. The Office Action refers to Figure 5 elements 130, 140, 150, and 160 as showing multiple field keys. However no such elements are present in Figure 5. These elements are present in either Figure 1 or Figure 2. If the Office Action is meant to refer to claims 1 and 2, these elements refer to the generation of the P and Q arrays, which are not multiple field keys because they are not groupings of single fields,

but rather processed array whose value depends on the value for each of the fields. *Liao* is providing a very different process for matching, which actually does not provide any of the elements of claim 1.

The Office Action further cites to *Gruenwald*, which the Office Action indicates shows grouping single fields of a multiple-field source into a search target. First, this is not sufficient. As shown above, *Liao* contains no teaching regarding MFKs. In addition to other elements, *Gruenwald* would be required to teach or such grouping single fields of a multiple-field source into a search target having a plurality of multiple-field keys (MFKs), each MFK having single fields that correspond to single fields in one of a plurality of multiple-field vectors (MFVs) of entries in a data structure. Second, it is submitted that it would make no sense to combine these two references even if *Gruenwald* in fact taught this. *Liao* not only does not provide any teaching regarding the grouping of single fields of a multiple-field source into a search target having a plurality of multiple-field keys (MFKs), such an element would make apparently make no sense in *Liao*. *Liao* provides a different form of searching, and breaking fields into MFKs and MFVs apparently would not work in the matching process described in *Liao*.

Third, *Gruenwald* does not contain the elements missing from *Liao*. What *Gruenwald* describes is a system for organizing data finding the data in a database, which is done by converting raw data into numeric representation and creating a data structure for the numeric data. (See *Gruenwald*, Fig. 3) However, what *Gruenwald* is doing is not grouping single fields of a multiple-field source into a search target having a plurality of multiple-field keys (MFKs). There is no grouping of single fields of a multiple-field source into a search target having a plurality of multiple-field keys (MFKs), each MFK

having single fields that correspond to single fields in one of a plurality of multiple-field vectors (MFVs) of entries in a data structure. In order for there to be grouping of single fields, the single fields have to end up in the resulting groups. In *Gruenwald*, the data fields are specifically not retained when the raw data is distilled. This is, in fact, the point of *Gruenwald*. *Gruenwald* is intended to take disorganized data and distill it into a form that will maintain the integrity of the database. "Another embodiment of the present invention may include an enterprise storage system that consolidates corporate information from multiple, dissimilar sources and makes that information available to users on the corporate network regardless of the type of the data, the type of computer that generated the data, or the type of computer that requested the data. The present invention enables raw data collected from different sources to be analyzed and distilled into a collection of accurate data, organized in a way that is useful for a particular application." (*Gruenwald*, col. 4, lines 42-55) "Using a process referred to herein as 'data dialysis,' the present invention 'purifies' raw data 210 to form reference data in reference database 220. Reference database 220 includes all the information found in raw data 210 including duplicate, incomplete, inconsistent, and erroneous data." (*Gruenwald*, col. 5, lines 18-23) However, "[d]istilled data stored in a distilled database 230 is derived from the reference data of reference database 220. Distilled data represents the 'accurate' data available from raw data 210. Distilled database 230 includes the unique information found in raw data 210. Distilled data thus represents the best information available from raw data 210." (*Gruenwald*, col. 5, lines 24-29) Thus, rather that grouping fields, *Gruenwald* is distilling data, which inevitably means the loss of

duplicative data and thus the elimination of certain fields. Thus, the single fields are not grouped as the system is described in *Gruenwald*.

Thus, neither *Liao* nor *Gruenwald* contains any teaching or reasonable suggested of certain elements of claim 1, and thus the combination of the two references cannot show these missing elements. It is submitted that the arguments presented above with regard to claim 1 also apply to independent claims 10, 19, and 28 and such claims thus are also allowable. The remaining claims are dependent claims, and are allowable as being dependent on the allowable base claims.

Conclusion

Applicant respectfully submits that the rejections have been overcome by the amendment and remark, and that the claims as amended are now in condition for allowance. Accordingly, Applicant respectfully requests the rejections be withdrawn and the claims as amended be allowed.

Invitation for a Telephone Interview

The Examiner is requested to call the undersigned at (503) 439-8778 if there remains any issue with allowance of the case.

Request for an Extension of Time

The Applicant respectfully petitions for an extension of time to respond to the outstanding Office Action pursuant to 37 C.F.R. § 1.136(a) should one be necessary. Please charge any necessary fee to our Deposit Account No. 02-2666.

Charge our Deposit Account

Please charge any shortage to our Deposit Account No. 02-2666.

Respectfully submitted,

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